

within twenty-four hours. 6. The quantity of bile was largest soon after meals, decreasing again from the fourth hour after the meal. The ingestion of water is more quickly followed by increased flow of bile, this being largest after the lapse of an hour.

Similar experiments have been performed on several dogs, in the Physiological Institution at Wurzburg, by Kölliker, H. Müller, &c. The amount of bile obtained there is larger than that assumed by Arnold, otherwise the result does not materially differ from that described by other observers.—H. WEBER, in *B. & F. Med.-Chirurg. Rev.*, Jan. 1856.

6. *Entrance of Spermatozoa into the interior of the Ova of the Frog and Rabbit.*—BISCHOPP, in opposition to his former views, admits now the fact discovered by Newport and Barry, concerning the entrance of the spermatozoa into the interior of the ova of the frog and rabbit.

Meissner found, likewise, several times, spermatozoa within the ovum of the rabbit. He further describes the ova of several insects (*musca vomitoria*, *musca domestica*, various species of tipula, cæla, &c.), with their micropyles, and the entrance of the spermatozoa through the latter. The spermatozoa undergo, according to him, a kind of fatty metamorphosis within the ovum; a change that, however, may be observed also in those spermatozoa which are retained in the testicles or in the vesiculæ seminales.—*Ibid.*

MATERIA MEDICA AND PHARMACY.

7. *Action of Nicotin.*—From experiments upon the action of this principle on mammalia, birds, frogs, and fishes, Dr. LEONIDES VAN PRAAG concludes, first, that Stas and Albers were incorrect in asserting that nicotin, topically applied, operates as a caustic irritant. The first effect of the poison upon the respiration is to increase its rapidity; but this increase is always followed by retardation, a fact which all former observers appear to have overlooked. This oversight seems attributable to the late period at which the retardation may take place. In one of Van Praag's experiments, the greatest fall in the frequency of respiration was observed at a period when all the other symptoms of poisoning had already ceased. In birds, there is indeed no retardation of breathing, but there is also no increase in its frequency. In twenty-one experiments, Van Praag on no one occasion observed increased rapidity of respiration without a subsequent retardation of it. Another important symptom, which was also observed by Bernard in his experiments, is a peculiar sibilus during respiration. This is attributed by Bernard to an over-active movement of the diaphragm; but Van Praag, with more probability, ascribes it to a contraction of some part of the air-passages, and suggests that its seat is the larynx, and that its muscles are thrown into a tetanic spasm, similar to that which affects other parts of the muscular system. The pulse is increased in rapidity by nicotin, but at a later period becomes slow or imperceptible. As respects the operation of the poison on the muscular system, all observers agree. In cases which do not proceed too rapidly, it is marked by very severe and frequently alternating tonic and clonic spasms, which attack different parts of the body, either simultaneously or consecutively. Subsequently to the convulsive stage occurs great debility, connected either with partial muscular trembling, or with a lively tremor of the whole body. In cases which run a rapid course, the convulsive state is often altogether wanting, and adynamia sets in at once, with tremor. In the most rapid cases of all, the muscles are not at all affected, and the animals sometimes die without any muscular movement. The influence of nicotin upon the sensory nerves varies; in some cases, pain is experienced on its application; in others, in the larger number of instances, none. And so, too, with respect to sensibility. In some instances, complete anæsthesia was induced, while in others no alteration of sensibility was traceable. In

all cases, the pupils were dilated at first; in some, at a later period, contracted. Salivation occurred in many instances. Purging and vomiting only occurred in those cases which recovered; but recovery may ensue without vomiting. The excretion of urine was in general not remarkably altered. The duration of the poisoning varied with its severity. When very severe, death has occurred immediately, without a single symptom. Van Praag is unable to state the largest dose of nicotin which would not be dangerous to man; at all events, a dose of half a grain is not fatal. He thus sums up the operation of nicotin: "The physiological operation of nicotin is at first stimulant, and at last depressing, not only to the circulation and respiration, but also to the nervous system. Accelerated circulation, increase of the respiratory movements, and excessive irritation of the muscular system, are the phenomena observed first; the concluding symptoms are those of general depression, both of animal and organic life." He recommends further investigation into the therapeutical applicability of nicotin to the treatment of the chronic skin disease and chronic inflammations.—*B. & F. Med.-Chirurg. Rev.*, Jan. 1850, from *Virchow's Archiv. für Path. Anat. &c.*, Bd. viii. heft. 1.

8. *On the Action of Aconitin.*—Dr. VAN PRAAG employed the alkaloid obtained from Trommsdorf of Erfurt, who assured him of its perfect purity. It was prepared from the root of the blue variety of aconite indigenous to Switzerland. Experiments were made upon mammalia, birds, frogs, and fishes. From the examinations of the bodies of the poisoned animals after death, he saw no reason to conclude that aconitin produced gastro-enteritis; neither do his examinations lead him to place prominently forward, as Schroff has sought to do, a non-coagulable state of the blood as a symptom of poisoning by aconitin.

As to the physiological operation of nicotin, the general conclusions drawn are, "that aconitin exercises a retarding influence upon the respiration, a paralyzing operation on the voluntary muscular system, and a depressing influence upon the brain." A retarding operation on the circulation was less marked than in the experiments of Schroff, and he concludes "that aconitin varies very greatly in the frequency with which it induces a reduction of the pulse." In general, it produces dilatation of the pupils. Schroff says that at the commencement of the experiment the pupil exhibits great variability, and from time even becomes contracted, but that this at length always terminates in dilatation. Salivation and increased excretion of urine must be regarded as amongst the less constant symptoms. Schroff describes as occurring in the human subject a peculiar contractile, compressing, even painful, sensation in the cheeks, over the jaws and forehead—in short, in the parts supplied by the trigeminal nerve. The only objective symptom observed by Van Praag that could be explained by such a sensation was licking of the mouth, which was noticed in two cases. Where death occurred suddenly, it was by asphyxia; but in cases where it was deferred for some time, the animals died apparently from exhaustion. From one experiment made with the alcoholic extract of aconite, it was observed that while, for the most part, its action agreed with that of the alkaloid, the symptoms referable to the stomach and bowels were more severe, and gastro-enteritis was moreover induced.

Judging from its physiological operation, Dr. Van Praag would consider aconitin adapted to those cases of delirium and mania which proceed from over-irritation. Perhaps, also, he suggests, it might be tried in severe tonic or clonic spasms, tetanus, trismus, chorea, and pure spasmodic asthma. He sums up thus his observations on its therapeutical applicability: 1. Aconitin operates much in the same way as the alcoholic extract of aconite, and is therefore to be recommended in those diseases in which this remedy has been proved to be serviceable. 2. Aconitin is far preferable to any other preparation of aconite, on account of the unchangeable nature of the well-prepared alkaloid; whereas the activity of the aconite, and consequently of its ordinary preparations, varies with a number of circumstances—such as the locality in which it grows, the year, &c. 3. Aconitin is wanting in the undesirable acidity of the extract, and consequently it exerts only the favourable operation of the extract without its injurious accessories.—*Ibid.*

9. *On the Use of Aconite in Disease.*—Dr. K. D. SCHROFF draws attention to two conclusions which he drew from his experiments with aconite, viz: 1. That both aconite and aconitin in adequate doses produces in healthy men and in rabbits increased secretion of urine. 2. That they act remarkably in depressing the action of the heart, either immediately or after a brief increase of the heart's action. He now says that he has observed both these effects also on administering aconite in disease. He relates, by way of illustration, a case of pleurisy in which he gave it with these results: Appropriate treatment had already lessened the fever, and reduced the frequency of the pulse to 100; but the urine remained scanty. On the 13th July, he began to give one-sixth of a grain of the alcoholic extract of the root of the aconitum neomontanum four times a day. After the first six doses, the frequency of the pulse was reduced about six beats, and the urine became somewhat more abundant, lighter coloured, and less thick. The dose was now increased to one-third of a grain four times a day, and then the quantity of urine became increased in a very remarkable degree, simultaneously with a diminution of all the morbid symptoms, while the pulse sank to 50. He considers the employment of aconite adapted for those cases in which it is desired to reduce increased action of the heart, and mentions especially hypertrophy of the heart, aneurism of the aorta and large arteries, and effusion into the pericardium, pleura, &c. The latter half of the paper is occupied by the reassertion of the conclusions derived from his physiological experiments, on which doubt has been thrown by Van Praag. He maintains his conclusions on the ground chiefly of his experiments on the human subject and rabbits, while Van Praag made no experiments upon the former, and only three upon the latter—in two of which death either occurred too rapidly for the diuretic effect to be observed, while in the third the dose given was smaller than Schroff has observed to produce this effect. In Schroff's experiments on the human subject and rabbits, large doses invariably operated in increasing the urine. In the former, the aconitin was given in doses of 0.02 to 0.05 grammes, while of the alcoholic extract 0.1 gramme was necessary. As to the reduction of the pulse, he asserts that, putting aside numerous experiments upon rabbits, this result occurred in twelve experiments made on the human subject with aconitin, and in thirty-eight experiments made with different preparations of various parts of the plant, and of three varieties of aconite. Large doses, however, are necessary. The effect was first observed with doses of 0.01 gramme of aconitin, and increased proportionally with the increase of the dose; 0.1 gramme of the alcoholic extract was necessary, and 0.2 gramme of the watery extract.—*Ibid.*, from *Wochenblatt der Zeitsch der Gesellschaft der Aerzte du Wien*. Ap. 1855.

10. *Experiments on the Operation of Loss of Blood upon the Course of Poisoning by Strychnine.* By W. KAUFF.—The object of these experiments was to test the doctrine which, since the known experiments of Magendie, has been universally held, that the rapidity of absorption, and thus of the operation of poisons, was lessened by a full condition of the vascular system, and increased by loss of blood. The method of experiment adopted was the introduction of a solution of nitrate of strychnine ($\frac{1}{2}$ d of a grain he found best adapted for the purpose) beneath the integument in the back of rabbits. Dr. Kauff compares the rapidity of poisoning in those animals which were not bled, and in those which were bled from the jugular vein before and after the application of the poison. He furnishes the results in some tables, of which the following may be regarded as a *résumé*:—

In the case of those rabbits which were not bled, the tetanus set in earlier than in those which were bled, viz: in a mean period of 4 mins. 30 secs.; while in those which were bled, in an average time of 5 m. 13 s., giving thus a difference of 43 s. The weight of the animal seemed to exert a marked influence upon the early or late occurrence of the tetanus. Comparing the results in the six heavier and six lighter unbled animals, the average time of occurrence of the tetanus in the former was 5 m. 45 s., and in the latter 3 m. 36 s. This result is much more striking in the instances of those animals which were bled, in which the tetanus on the average occurred in the heavier after 36 m.

48 s., but in the lighter after 14 m. 18 s. Much more striking even than the time of occurrence of tetanus was the difference between the periods of death in the bled and unbled animals. The average time which elapsed before death in those not bled was 9 m. 39 s., while in those which were bled it was 27 m. 56 s. The weight of the animals here also exerted an influence—the mean period of death (taking the bled and unbled together) was 23 m. 12 s., after application of the poison, for the heavier, and 13 m. 56 s. for the lighter animals. The sex of the animals also seemed to exert an influence, the males dying on an average in 15 m., and the females in 25 m. The amount of the venesection exerted an influence, the proportion of the duration of poisoning after a large and small bloodletting being as 4 : 2½. It was further observed that when the animal was placed in a small basket, and thus hindered from springing about, both the occurrence of the poisoning and death were delayed.

The results of these experiments are thus directly opposed to the doctrine generally accepted, and show that both the occurrence of the symptoms of poisoning and the death (using these as the measure of the rapidity of absorption) are really delayed by loss of blood.

This is a very important paper, and the subject well deserves following up, since the conclusions of this experimenter, if confirmed and extended, must lead to therapeutic reforms.—*B. & F. Med.-Chirurg. Rev.*, Jan. 1856, from *Vierordt's Archiv für Phys. Heilk.* Heft 1, 1855.

11. *Parsley Oil (Apiol) as a Remedy for Intermittent Fever.*—MM. JORET and HOMOLLE state that parsley oil, in doses of fifty centigrammes to one gramme, determines a slight cerebral excitement similar to that produced by coffee, with epigastric warmth, and a sense of strength and comfort. After doses of two to four grammes, phenomena of intoxication are observed, scintillations, dizziness, vertigo, hissing in the ears, frontal headache, &c. They compare these symptoms with those which follow a strong dose of sulphate of quinine. It is only exceptionally that they have found borborygmi, nausea, and colic, with bilious diarrhoea, to supervene. They also consider that it is emmenagogue, and they place it in the class of tonics.

In discussing its applicability to the cure of intermittents, they describe briefly the particulars of forty-three cases treated by M. Lefèvre at Rochefort, M. Dupré at Bourg-en-Bresse, M. Denis at the hospital of Auray, M. Fernet of Paris, and by M. Amic in Martinique. Of this number, thirty-seven were cured and had no relapse; and in six, though the fever was not removed, yet it was modified in intensity. Of these forty-three cases, twenty-one were quotidians, eighteen tertians, and four quartans; five quotidians and one quartan resisted the remedy—all the others were cured. The writers consider that a proportion of cures thus amounting to eighty-six per cent., suffices to prove the value of parsley oil in indigenous intermittents. As respects the intermittents of hot countries, they group together the observations accumulated by a Commission of the Society of Pharmacy to test the substitutes for quinine at Rome, Perpignan, and Ajaccio, with those of Dr. Amic of Martinique. Of thirty cases thus treated, sixteen were cured. Nineteen of these were quotidian, of which twelve were cured; ten were tertians, of which four were cured; and one quartan, which was not cured. The conclusion drawn is, that if parsley oil be not of equal value with quinine in treating the intermittents of hot climates, it may yet be very well substituted for that remedy in indigenous intermittents; and they consider that it may also prove serviceable in intermittent neuralgia, and the night sweats of phthisis.—*B. & F. Med.-Chirurg. Rev.*, Jan. 1856, from *L'Union Médicale*, Jan. and Feb. 1855.

12. *Iodine Paint with Mastic.*—The following is the formula for an iodine paint, made adhesive by the addition of mastic, which is used at the Moorfields Ophthalmic Hospital: *R.*—Spirit. vin. rect. ʒij; sp. æth. nitr. ʒiv; mastic ʒss; iodinii, ad saturat. The advantage gained is, that it does not run about the skin so much. Iodine counter-irritation to the lids continues to hold a high place in the estimation of the surgeons to this hospital.—*Med. Times and Gaz.*, Feb. 9, 1856.

13. *Astringent Lotion for Ulcers*.—A lotion consisting of half a drachm of the tincture of catechu, to a pint of the decoction of oak bark, is a favourite one at the Aldersgate Street Dispensary, as an application to foul and indolent ulcers on the leg. Mr. SAVORY, the surgeon to the institution, informs us that he finds it superior in efficiency to most other astringents. It is applied freely, a piece of lint being well soaked in it, and laid over the sore.—*Ibid*.

14. *Chloride of Zinc Collyrium*.—At the Royal Ophthalmic Hospital (Moorfields), Mr. CRITCHETT has for some time been employing a lotion of chloride of zinc as an eye-water, in cases of vascular and thickened conjunctiva. He holds that the disease is a sort of "gleet of the eye," and analogous in nature to gleet of the urethra. The strength used, is one grain to the ounce. It has not yet found its way into the Hospital Pharmacopœia.—*Ibid*.

MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

15. *Asphyxia, and its Treatment*.—Dr. MARSHALL HALL read a paper on this subject before the Harveian Society, December 6, 1856.

He began by stating that, as the details of his investigation were before the Royal Humane Society, he could only place a brief abstract of them before the members of the Harveian Society.

His object was to show:—

1st. That the blood during *circulation* becomes *self-poisoning*, chiefly by means of the carbonic acid formed.

2d. That the poison is, *pari passu*, eliminated by respiration.

3d. That, during suspended respiration, this carbonic acid poison accumulates in the blood.

4th. That the *special* means of obviating this effect, the *unicum remedium*, is to excite or imitate respiration.

5th. That every means of augmenting the circulation *without* simultaneous respiration, augments the formation of the carbonic acid poison, and consequently tends to destroy life.

6th. That the modes of inducing artificial respiration hitherto proposed are nugatory and injurious, for the following reasons:—

7th. 1. The posture in which this measure has been attempted being the supine, the tongue falls backwards, carries with it the epiglottis, and closes the glottis against all inspiration.

8th. 2. That fluids accumulated in the fauces, either from external sources or by regurgitation from the stomach, operate in the same manner.

9th. 3. That the means of artificial respiration hitherto employed have been either of the nature of the *forcing-pump* or of the *suction-pump*.

10th. 4. That the former of these, besides having to overcome the impediment already described at the glottis, must necessarily be of force great enough to raise the ribs and carry down the diaphragm; and that such a force, as proved by Legallois and Leroy, may injure the delicate tissues of the lungs.

11th. 5. That the other mode of inducing respiration, by applying and removing pressure, is utterly inefficient, for the reason already mentioned, viz: the obstruction at the glottis.

12th. That there is ONE mode of inducing respiration which at once obviates all these difficulties, and proves all-efficient.

13th. That this consists: 1. In exchanging the *supine* for the *prone* position. 2. In inducing the movements of respiration by alternately allowing the weight of the subject to press on the thorax and abdomen by laying it on its face, and removing that pressure by raising it; this last effect being accomplished by raising the shoulders on the ilia as a centre, or by raising both shoulders and hips together by lifting; or, lastly, by turning the subject on the side.